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**HABITS OF LYSIPHLEBUS sp.**

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**D**URING the past summer I noticed that some of the corn-fields about Lawrence, Kan., were badly infested with the corn-leaf louse, *Aphis maidis* Fetch. At this time I was greatly interested in insect parasitism, and so watched closely for any evidence of it in this species. On the afternoon of August 10 my search was rewarded by the finding of seven parasitized specimens of *Aphis maidis* sticking to the tassel of a corn-stalk. These were taken to my room, where I could easily watch the emergence and secure the parasites. On August 12 two specimens of the genus *Lysiphlebus* emerged and were promptly mounted for study. Nothing came from the remaining five. Thenceforward I watched the fields closely for further parasitism, but saw no more until September 20, when, while collecting on the college farm at Manhattan, Kan., I found a female of *Lysiphlebus* sp. on volunteer corn, with some specimens of *Aphis maidis* that clearly showed evidence of parasitism, and on the following day I found hundreds of parasitized lice dead and dying on the under sides of the leaves and on the inner husks of the corn-stalk. At Lawrence the parasitized individuals were found only on the young tassels and the two upper leaves, while at Manhattan, six weeks later, they were confined to the leaves and husks. As the season advanced the lice left the leaves and the infestation came to be limited to the inner husks about the ear, becoming so great here that these were frequently entirely covered with aphids. By the first of October winged individuals were very plentiful, and from this time forward the infestation decreased until, with the coming of the first frosts, about the 1st of November, it disappeared from here as well. At this stage I became very anxious to know where the lice had gone and what the parasite was going to do for a host, but, in spite of close watching, am unable to answer either of these questions satisfactorily.

I found wingless *Aphis maidis* on well-grown volunteer wheat as late as November 24, but from November 9 the specimens under observation have been torpid. The majority of the embryo parasites inhabiting the lice on the 1st of November have not emerged, but also appear to be dormant.

After carefully comparing this species with the seventeen described by Ashmead in the Proceedings of the United States National Museum, volume II, 1888, page 662, I am convinced that we are dealing with a species that is not identical with any described in that work, and I therefore append the following description, written from fully fifty males and females of *Lysiphlebus* sp. that had been bred from *Aphis maidis*:

The male of the *Lysiphlebus* sp. has fifteen-jointed antennæ, the first and second coxæ yellowish-brown to honey-yellow, third coxæ being yellowish-brown to darker basally; head and thorax entirely black; petiole yellowish-brown, terminal antennal joint equal to the preceding; antennæ uniformly brown-black, basal joint of hind tarsi not equal to the following. It differs from all other species described by Ashmead (in the above reference) in that the terminal antennæ joint is equal to the preceding.

The female *Lysiphlebus* sp. has thirteen-jointed antennæ; head and thorax entirely black; first and second coxæ yellowish-brown, third yellowish-brown to darker basally; petiole yellowish-brown; hind joint of tarsi not equal to the following joint, from 1-10th to 4-10ths longer than the following, antennæ brown-black; joints of flagellum about twice as long as thick.

Soon after my discovery of parasitized *Aphis maidis* at Manhattan, the entomological department undertook the study of this parasite, and it is by the courtesy of Doctor Headlee that I have the privilege of using data from the experiments performed for the college.

Soon after emerging the parasites copulate, occupying an average of fifty-two seconds, and in some cases unite after the female has deposited several of her eggs. The female runs nervously about among the aphids, and when she finds one not parasitized throws the tip of her abdomen underneath her body between her legs, and with a quick "spring-like motion" thrusts her ovipositor into the body of the aphid, leaving there an egg. We then set about the determination of the length of life cycle of *Lysiphlebus* sp., and the number of aphids a single female would destroy. Twenty-five cages were set, each consisting of a flower-pot containing a stalk of corn or sorghum covered by a cloth-capped common lantern globe. From 100 to 200 fully grown *Aphis maidis* were placed on each plant and a single pair of parasites introduced among them. During the entire experiment reliable maximum and minimum ther-

mometer records were kept. Seventeen of the cages came through without accident. At a mean daily temperature of 62.6 degrees F. the parasite passed from egg to adult in an average of 16.8 days, with 13 to 23 days as extremes. A single female successfully parasitized from 1 to 147 individuals, with an average of 34.

We then made an effort to determine what other hosts this species of *Lysiphlebus* could use. We tried fertilized females on *Hyalopterus arundinis* Fab., *Siphocoryne avenæ* Thomas, *Aphis cucumeris* Thomas, *Nectarophora calendulæ* Morrell, *Nectarophora prunicola* Ashmead, *Chaitophorus negundinis* Kalt., *Nectarophora chrysanthemi* Oestl., and *Toxoptera graminum* Rond., but found they worked readily only on *Aphis cucumeris*, *Siphocoryne avenæ*, and *Toxoptera graminum*. In case of the last, under a mean daily temperature of 60 degrees F. the parasite passed from egg to adult in an average of 17.5 days.

When we consider that this *Lysiphlebus* sp. lives readily at the expense of *Toxoptera graminum*, which has so lately shown its ability to destroy wheat and oats of immense areas, besides being able to subsist on other hosts that are seriously injurious to human welfare, it is clear that this species is worthy of careful study from a purely economic view-point, to say nothing of its scientific interest.

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